NOTABLE EMERGENCY RESPONSES

Superior Refinery Explosion and Fire, Superior Wisconsin

On April 26, 2018, at approximately 10:00 AM, Superior Refining Company was shutting down equipment for a facility turn-a-round when an explosion and fire occurred. By 11:00 AM, the initial fire was extinguished. However, due to the explosion, a piece of shrapnel damaged Tank 101, which contained approximately 50,000 barrels of asphalt.

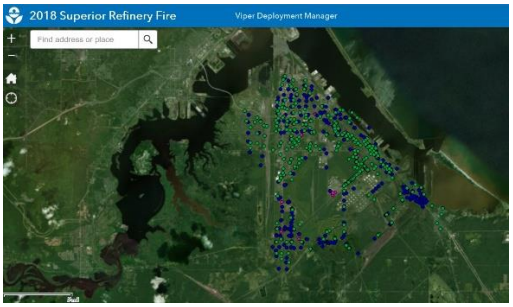
At 12:00 PM, a second fire began in the spilled asphalt from Tank 101. Due to the ensuing fire, the refinery was evacuated. A community evacuation was ordered by the local Fire Department. The extent of the evacuation area covered 3 miles to the east and west of the refinery and 10 miles to the south. The size of the evacuation was based on the potential for impact to a 15,000-gallon hydrofluoric acid (HF) holding tank. The fire spread to multiple process areas and seven additional large asphalt tanks were impacted.

- EPA deployed 4 OSCs, 1 ERT member, 2 SERAS personnel, and 7 START to the incident. EPA integrated into the local Incident Command Structure (ICS) and focused resources on providing air monitoring support, assessment of off-site impacts (soot and debris), and ensuring notifications to natural resource trustees, tribes, and states. USCG MSU Duluth provided support with oversight of booming of oil-effected Newton Creek, a tributary to Lake Superior Bay.
- EPA worked with the Refinery and their consultant GHD to establish a three-tiered air monitoring network and was involved with the review/development of the air monitoring plan. Air monitors were immediately deployed throughout the community to assess risks to first responders (Police enforcing evacuations and closures), at the facility fence line to assess on-going emissions from the damaged facility, and inside the refinery to protect workers from new releases and dangerously unstable situations immediately following the fire.
- Early in the response, EPA requested air plume modeling analysis support from the Inter-Agency Modeling and Atmospheric Assessment Center (IMAAC). In addition, the OSCs received the EPCRA Tier II report of chemicals at the facility (and the FRP for oil spill information). The Tier II information was used to identify the EHS chemicals such as ammonia, Hydrofluoric Acid (HF) and chlorine that were on site. Radiological sensors/equipment were also assessed for damage and accountability.
- EPA worked overnight to collect air data in support of lifting the evacuation order on the 27th. In addition, EPA developed a Web viewer to manage and share data and information and established the capability for a data push to EPA VIPER servers in case of another incident so stakeholders had immediate access to the data. At the end of each day, all air monitoring data was summarized and provided to the Wisconsin State Health Department and the Douglas County Department of Health and made available to the public through their web-site. EPA later collected independent air samples for chemicals of concern.
- EPA worked with the refinery to address concerns related to soot deposition and debris from the fire that may contain suspect asbestos. EPA worked with ATSDR, Wisconsin Department of Health and the Douglas County Health Department to provide information to the public. WI DHS created a fact sheet on gardening and PAHs which were a prevalent concern at community meetings.
- EPA worked with the State of Wisconsin and the Refinery and monitored a multitude of response activities including; site stabilization activities (de-inventorying of damaged equipment and piping, maintaining nitrogen blankets in reactive equipment, oil recovery on-site and off-site, modifying air monitoring parameters as portable Vapor Combustion units (VCUs) were brought on line, PFAS/PFOA fire-fighting water and foam collection and treatment, removal of chlorine and ammonia from the site, WWTP damage and re-start), oiled-wildlife capture-decon and hazing efforts, water quality sampling in Newton Creek and Lake Superior Bay and attending public meetings.
- In addition to monitoring conducted by the EPA, the company's environmental consultant eventually collected more than 20 million air quality readings in the community and at the refinery at

approximately 5,600 individual locations. The results of the community monitoring program can be found on the Douglas County Department of Health and Human Services website.

Photo: Bob King/Duluth News Tribune

Air Monitoring in Neighborhood



Air Monitoring locations and Data Platform